

```
=> s tungsten leach? and reduc? and oxid?
      204929 TUNGSTEN
      122287 LEACH?
      81 TUNGSTEN LEACH?
        (TUNGSTEN(W)LEACH?)
      2365089 REDUC?
      3206799 OXID?
L1      2 TUNGSTEN LEACH? AND REDUC? AND OXID?
```

```
=> d 1-2 ibib abs hitstr
```

```
L1 ANSWER 1 OF 2 HCAPLUS COPYRIGHT 2008 ACS on STN
ACCESSION NUMBER: 1982:38798 HCAPLUS
DOCUMENT NUMBER: 96:38798
ORIGINAL REFERENCE NO.: 96:6393a,6396a
TITLE: Partitioning molybdenum and tungsten from a mixed
        calcium molybdate-calcium tungstate precipitate
INVENTOR(S): Rappas, Alkis S.; Menashi, Jameel; Douglas, Donald A.
PATENT ASSIGNEE(S): Cabot Corp., USA
SOURCE: U.S., 35 pp.
        CODEN: USXXAM
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:
```

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 4278644	A	19810714	US 1980-140436	19800415
PRIORITY APPLN. INFO.:			US 1980-140436	A 19800415

AB Superalloy or tool steel scrap containing Cr, V, Mo, and W is calcined with Na₂CO₃ in air. Subsequent leaching produces the soluble MoO₄²⁻, VO₄³⁻, WO₄²⁻, and CrO₄²⁻ for separation from the insol. oxides of base metals. The V, Mo, and W are separated from the leach solution, and Cr⁶⁺ is reduced to Cr³⁺. A mixed solution containing CaO.nV₂O₅, CaMoO₄, and CaWO₄ is produced, and is treated with: (a) carbonated water or formic acid, to dissolve V for recovery; and (b) H₂O₂-containing H₂SO₄, to precipitate CaSO₄ for concentrating W and Mo. The W is precipitated by thermally decomposing the peroxy complexes. No aqueous effluents are produced, and reagent consumption is decreased. Thus, the grindings of Ni-base superalloy [80329-36-8] (Ni 55, Co 2.5, Fe 5.5, Cr 15.5, Mo 16, W 3.8, and miscellaneous 1%) were mixed with equal weight of Na₂CO₃, calcined in air 4 h at 1100°, and leached with water for extraction of Mo 96.3-9.2, W, and Cr 98.3-9.8%. Recovery was increased as the nominal particle size of the grindings decreased from 400 to 75 μ. The mixture of shredded turnings and grindings was also successfully calcined for leach extraction. A synthetic leach solution containing the Na salts of Cr⁶⁺ (47 g/L), Mo⁶⁺, W⁶⁺, and V⁵⁺ was reduced with HCO₂Na [141-53-7] in the presence of CO₂. The content of Cr⁶⁺ was thereby decreased to 2.5 g/L for the improved removal of Mo, W, and V. The CaCO₃ in filter cake was selectively dissolved by formic acid [64-18-6], together with some CaCrO₄, to decrease the precipitate amount for

recovery of Mo and W. The CaMoO_4 + CaWO_4 filter cake was treated with H_2SO_4 containing NH_4HSO_4 and H_2O_2 , the CaSO_4 tailings were precipitated out, and the

solution was heated to precipitate the W values. Residual solution was treated with

activated charcoal to remove the residual W from O-rich solution

L1 ANSWER 2 OF 2 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 1967:435019 HCAPLUS

DOCUMENT NUMBER: 67:35019

ORIGINAL REFERENCE NO.: 67:6631a,6634a

TITLE: Extractive separation of molybdenum and tungsten from acid solutions

AUTHOR(S): Petrov, M. A.; Maslenitskii, N. N.; Davydova, A. D.

SOURCE: Tsvetnye Metally (Moscow, Russian Federation) (1967), 40(3), 16-20

CODEN: TVMTAX; ISSN: 0372-2929

DOCUMENT TYPE: Journal

LANGUAGE: Russian

AB Mo and WO_3 were extracted from an impure H_2O solution, containing Mo .apprx.5, WO_3

.apprx.5, P .apprx.0.5, Ca .apprx.12, and HCl 15 g./l., with a solution of tech. tertiary C7-9 aliphatic amines in an unstated organic solvent. The best amine concentration in the organic phase was 50 g./l. The best

organic:aqueous phase

volume ratio was 1:3. Extraction after 3 stages was Mo 99.45 and WO_3 99.85%.

Increasing the HCl concentration >95 g./l. had little effect on the extraction of WO_3 ,

decreased that of Mo to <50, and of P to <20%. Best HCl concentration was 5-15 g./l.; extraction of Mo and WO_3 was almost complete and that of P was .apprx.50%. The P was apparently dissolved in the form of heteropoly compds., since it was not extracted in the absence of the metals. Increasing the HCl concentration to 73 g./l. increased the WO_3/Mo partition coefficient

to a

maximum, which increased with increasing WO_3/Mo ratio. Further acidity increase decreased the coefficient Increasing the aqueous:organic phase

volume ratio

(1-9) had little effect on the partition coefficient (74-80) at HCl 73 g./l. and increased it (14-86) at HCl 150 g./l. A 1-stage separation was not feasible, since 30-60% of the Mo was extracted with the WO_3 . The organic

solution

containing Mo 17.5 and WO_3 16 g./l. was extracted with about the stoichiometric amount of NaOH in H_2O solution; extraction was .apprx.99.9%. Increasing the

NaOH

concentration (5-20 g./l.) decreased the number of extraction stages (6-3) and the NaOH

solution volume and increased the metal concentration in the extract The oxidized metal compds. were extracted before the reduced

compds., and Fe hydroxide was precipitated The extract NaOH concentration

could be

decreased to 2-4 g./l. without affecting the process.

=>